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ABSTRACT

A study examined the acceptability of distance education as a means of staff development for literacy and adult basic education (ABE) providers in rural Pennsylvania and the perceived need and available resources for such a program. The major project activities were a review of the literature on literacy staff development by distance education in the United States and Canada and a survey of literacy program administrators, teachers/staff, and volunteers throughout rural Pennsylvania. Of the 306 surveys mailed out, 138 (45%) were returned and 122 (40%) were considered usable. Staff development was found to be more important to administrators and teachers/staff than to volunteers. Although access to equipment for distance education delivery was discovered to be problematic, it was determined that an interactive audio system for distance education of literacy and ABE providers can be put in place economically with minimal training and can be upgraded over a 5-year period. Appended are a list of regional coordinators contacted, statistics from the survey, and the literature review. (Contains 20 references.) (MN)

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ED 368 874

TITLE: **Assessing the Need Acceptability, and Available Resources for Adult Literacy Staff Development Through Distance Education in Rural Pennsylvania and Recommended Models to Meet the Needs**

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PROJECT DURATION: September 1992- June 30, 1993

PROJECT NUMBER: 2460000376 (Contract number 098-3001)

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Project #: 2460000376 (contract 098-3001) **Funding:** $17,602

Project Directors: Daniele D. Flannery, Ph.D.
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Agency Address: Penn State University - Harrisburg
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and The Institute for the Study of Adult Literacy, Penn State University

Description: A survey of literacy and ABE providers in rural Pennsylvania to determine: Their acceptance of distance education for staff development, their comfort with various modes, the accessibility of various equipment. A literature review of staff development for literacy and education in rural North America was included. Recommendations/implementation plan.

Objectives: In rural PA: 1) determine staff attitudes towards various interactive distance education technologies for purposes of staff development, 2) to provide an overview of the equipment accessible to staff, 3) to provide a literature review of such staff development in North America.

Target Policy-makers, administrators, teachers/tutors

Products: Recomendations for implementation of distance education across rural PA.

Evaluation: Evaluated by a 7 member Committee of Experts from Staff Development Projects in rural PA. with input from the Institute for the Study of Adult Literacy, and Center for the Study of Distance Education, University Park.

Findings: An interactive audio system can be put in place economically with minimal training, to be upgraded, over a 5 year period.

Conclusions: ABLE staff are interested in staff development by distance education, such a system can be provided.

Descriptors:

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ABSTRACT:

Pennsylvania is considered a "rural state" with a high density of its population, and a high proportion of its illiteracy problem, in the state's rural areas. The recent federal initiative under the National Literacy Act to provide professional development to literacy tutors/teachers creates a challenge for Pennsylvania if it is to reach the teachers/tutors in its rural ares for professional training and development. This study examined the viability of using various modes of interactive distance technology to reach and provide professional development for this group.

Essentially a "fea bility study," it examined: 1) The literature on conducting professiona development through distance education within literacy and public education in the U.S. and Canada, 2) the types of distance education equipment which now exist in a representative sampling of literacy programs in PA's rural areas for this purpose and 3) the acceptance of teachers/ tutors of various modes of interactive technology for such professional development in a sampling of programs in rural areas. The study also provides recommendations for future policy consideration. It is the hope of the investigators that this study could provide a research model for other states/provinces with a high rural composition. It is also thought that the recommendations given may have implications beyond PA alone.

INTRODUCTION

Background and Rationale:

It is widely agreed among educators, legislators and the wider research community that the complex problems facing literacy are particularly acute in the all too often neglected rural areas of this country (eg. Beder, 1991; Institute for the Study of Adult Literacy, 1990). For Pennsylvania, the challenge for rural literacy into the 21st century is two-fold: 1) To have the vision to develop the innovative technologically-based means for meeting the Staff Professional Development (SPD) needs among the "hardest to reach to train" and, 2) to have the collective ability and will to mobilize existing resources and provide needed technologies for staff development into the future.

Without attention to the rural programs of Pennsylvania (PA), considered a rural state (Pennsylvania State Data Center, 1992), it will be extremely difficult to impact illiteracy in the future. It will also be difficult to rationalize professional development under the new nine region plan for Pennsylvania (see Christopher memo, March, 1992, Appendix A). Equal access to training for all staff will be very difficult unless there is a viable means for reaching the most remote program areas of the Commonwealth.

Distance education can provide a cost-effective means to reach rural literacy educators (Barker, 1987; Benson & Hirschenm, 1987; Independent High School, 1988; Siegmund &

McFadden, 1985; Wall, 1985). But, innovation, however simplistic or sophisticated in design, is not always accepted by the users (Cookson, 1990). Before launching into technological innovation for rural Pennsylvania literacy staff development, questions about acceptability and access needed to be addressed. Planning needs to be based on what exists. This study has attempted to provide some of the foundation for that planning.

2. Time Frame:

This project was conducted through a September, 1992-June, 1993 ten month period.

3. Staff and Key Personnel:

The Co-Directors of the project were

Dr. Daniele D. Flannery, Ph.D.
Assistant Professor and Coordinator Adult Education D.Ed. Program, Harrisburg

and

Dr. B. Allan Quigley, Ed.D.
Associate Professor and Regional Director Adult Education M.Ed. Program, Monroeville, PA.

Significant research input was made by Jackie Frye, a Doctoral Student with Penn State and help was provided by Gen Murphy, a Masters Student with Penn State University.

Administrative assistance was provided by The Institute for the Study of Adult Literacy and support was provided by the Center for the Study of Distance Education, both at Penn State University. An Advisory Board of the Directors and/or Co-ordinators of the Staff Development Projects (see Appendix A) from seven most rural regions in the state provided guidance and input both to the survey design and the final report. Additionally, two researchers, one each from the Center for the Study of Distance Education, one from the Institute for the Study of Adult Literacy examined the literature review, contributed to the survey instrument and discussed findings with the investigation team.

4. Target Audience:

·Policy Makers with Pennsylvania Department of Education in Harrisburg, Directors and/or Co-ordinators of the Staff Development Projects in Pennsylvania.

·Teachers, administrators and tutors of literacy in the rural areas of Pennsylvania.

·Distance Education researchers, policy-makers, administrators in other states and Canadian provinces.

5. Permanent Copies Location:

Permanent copies of this report may be obtained for the

next five years at the following addresses:

·Department of Education Commonwealth of Pennsylvania 333 Market Street HARRISBURG, PA. 17126-0333	and	·AdvancE 333 Market St HARRISBURG, PA. 17126-0333

REPORT

6. Problem Statement:

It is widely agreed among educators, legislators and the wider research community that the complex problems facing literacy are particularly acute in the all too often neglected rural areas of this country (eg. Beder, 1991; Institute for the Study of Adult Literacy, 1990). For Pennsylvania, the challenge for rural literacy into the 21st century is two-fold: 1) To have the vision to develop the innovative technologically-based means for meeting the Staff Professional Development (SPD) needs among the "hardest to reach to train" and, 2) to have the collective ability and will to mobilize existing resources and provide needed technologies for staff development into the future.

It is clear that Pennsylvania is a rural state and, therefore, must take special efforts to reach the literacy practitioners in those regions if it is to take an even-handed approach to professional development in the

Commonwealth. More specifically, after the 1990 census, the Pennsylvania State Data Center (Harrisburg Campus) compiled statistics showing that Pennsylvania leads the nation in rural population with 31% of its total population residing in rural areas. The rural population figure, 3,693, 348, reflects an increase of 1.4% since the 1980 census was taken and compiled. *(PSDC,* 1992, p.1)

In addition, the State Data Center reports that seven counties out of Pennsylvania's 68 total counties are 100% rural. These include Forrest, Fulton, Juniata, Pike, Sullivan, Susquehanna, and Wyoming counties. An additional 17 counties--Adams, Armstrong, Bedford, Bradford, Clarion, Clearfield, Greene, Huntingdon, Indiana, Mifflin, Monroe, Perry, Potter, Snyder, Somerset, Tioga, and Wayne--are reported to have more than 75% of their populations residing in rural areas *(PSDC,* 1992, p.1).

Conversely, Pennsylvania has only one county that is 100% urban -Philadelphia--and only eight counties--Delaware, Allegheny, Montgomery, Lackawanna, Lehigh, Bucks, Dauphin, and Beaver--with more than 75% of their populations residing in urban areas *(PSDC,* 1992,p.1).

Thus, the Pennsylvania State Data Center reports that while Pennsylvania is able to claim only 13% (9/68) of its 68 total counties as urban with urban populations of more than 75%, it is able to claim 35% (24/68) of its counties as rural with rural populations of more than 75%. In fact, a

full 62% of Pennsylvania counties (42/68) have at least 50% of their populations residing in rural areas *(PSDC,* 1992,p.1).

Without attention to the rural programs of Pennsylvania in the disproportionately large rural area of the state, it will be extremely difficult to impact illiteracy in the future. It will also be difficult to rationalize professional development under the new nine region plan for Pennsylvania (see Appendix A). Equal access to training for all staff will be very difficult unless there is a viable means for reaching the most remote program areas of the Commonwealth.

Distance education can provide a cost-effective means to reach rural literacy educators (Barker, 1987; Benson & Hirschenm, 1987; Independent High School, 1988; Siegmund & McFadden, 1985; Wall, 1985). But, innovation, however simplistic or sophisticated in design, is not always accepted by the users (Cookson, 1990). Before launching into technological innovation for rural Pennsylvania literacy staff development, questions about acceptability and access needed to be addressed. Planning needs to be based on what exists. This study has attempted to provide some of the foundation for that planning.

7. Goals and Objectives:

The project had four main objectives:

1) To develop a literature review of relevant distance education programs along with any needs assessments and success measures conducted showing levels of staff professional development in the U.S. and Canada--including exemplary models from schools--for possible usage in Pennsylvania. (See Appendix C).

3) Collect data from literacy providers of rural PA regarding their attitudes toward and access to distance education for staff development. Specifically, to examine three levels of technology for purposes of data gathering and analysis based on the framework of what has already been used successfully in Pennsylvania and other states such as Wisconsin, Oklahoma, and Iowa (Barker, 1987; Institute for the Study of Adult Literacy, 1990):

#1 Minimal: Interactive audio necessitating only telephone hook-ups, interactive speaker systems, e.g., Darome units, with print reading materials (used daily and effectively at Penn State in several programs, including Adult Education).

#2 Optimal: Interactive video and audio graphics (e.g. electronic blackboards) plus print reading materials, supplemented with computer conferencing using existing personal computers and modems: (and interactive video-

audio using existing t-1 links where possible, such as at PSU Beherend,Harrisburg, Great Valley, and Hershey Medical Center).

#3 Maximum: All of the above with interactive video/audio at most locations using satellite down-link transmission in local facilities and satellite uplink technology at Penn State, University Park.

In summary, the project was (a) to develop a base-line summary of existing Pennsylvania distance education resources available to support rural literacy staff development, and (b) to assess the perceived and felt needs for distance education staff development. Finally, 3) To put forth three technological scenarios, differing in: (a) nature and scope based on the level of technological equipment available, (b) attitudes toward the use of these mediums, (c) guidance from the literature search of other states and provinces, and the input of the community-academic panel of experts.

8 Procedures Overview:

8.1 Definitions Used:

Distance education was defined as "all forms of education in which all or most of the acts of teaching occur at a different place from all or most of the learning with the result that communication between teachers and learners is by print or electronic media," (working definition accepted at the Center for the Study of Distance Education).

A rural area was defined as "counties with 50% or more rural populations using (Pennsylvania State Document Center [PSDC] News, 10(1)February, 1992).

8.2 Sampling Procedures

For sampling of literacy programs, the names of all literacy providers, administrators, tutors, teachers and staff in primarily rural regions of PA were collected from the Regional Staff Development Coordinators (see Appendix A). A sample for the survey was gathered using a random selection of twenty-five percent (25%) of the teacher/tutor staff names from each of the rural regions. All of the administrators were surveyed.

8.3 Survey Instrument

The survey instrument was designed from the information gathered in the literature review, discussed above. It was

designed to collect information on the type and number of distance education "hardware resources" in, or readily available to, the rural literacy programs which could be utilized for staff development. The survey also collected information on the actual need and acceptability of distance education from the participants. It was then piloted and reviewed with the panel of experts who added comments on clarity and relevance.

Copies of the survey were first mailed out in March, 1993. A follow-up postcard reminder was sent three weeks later. Three weeks after the postcard, a new survey was sent to those who had yet to respond.

9. Objectives Met

- A representative sampling of tutors and teachers/staff as well as administrators was surveyed with an acceptable return rate.
- The basic availability of interactive distance education was surveyed.
- The knowledge base of tutors and teachers/staff on the use of these media was surveyed.
- The "comfort level" and acceptability of various these media was investigated among tutors and teachers/staff.
- Recommendations in the form of three scenarios is

given.

·A cohort of co-ordinators/directors of the rural regions has been involved and, based on the meetings held, would be in a position to implement the recommendations given.

10. Negative Objectives and Objectives Not Met:

·It was anticipated that some administrators would need to be personally interviewed; however, their return on the survey was high--higher than the teachers or tutors--and it was decided this step was not necessary. This indicates a high willingness among administrators, as compared with tutors and teachers, to participate in future projects of this type.

·It was anticipated that the survey would reveal both who distance education experts were in each region to assist in the future of this project and what equipment existed--e.g., an "inventory." These two objectives were too ambitious for this project. It was obvious from the survey that very few "experts" exist within our field on this topic in rural PA. A second study involving a much wider field of subjects than the literacy teachers and tutors/staff within the rural areas would be needed to meet this objective. Secondly, a precise inventory would require a fuller survey of

the programs in PA. and, in fact, this is one of the recommendations made in this report.

FINDINGS:

11. Instrument, Methodology, Findings

a. Survey Data:

Three hundred and six surveys were mailed out. Forty-five percent (n=138) were returned. Forty percent (n=122) of those returned were usable. [1] "Unusable" surveys were those with many questions unanswered (Please see Positions of Total N, Chart #1 and Worksheet 1 for visual description of survey population).

b. Survey Responses on Staff Development Needs:

One of the most important findings of this survey was the variety of responses to questions about staff development itself (see Table 1 below). The responses differed by the various roles people held. Staff development was more important to administrators and teachers/staff (please see Total Charts, Admin Charts Instructors Charts and Volunteer Charts following).

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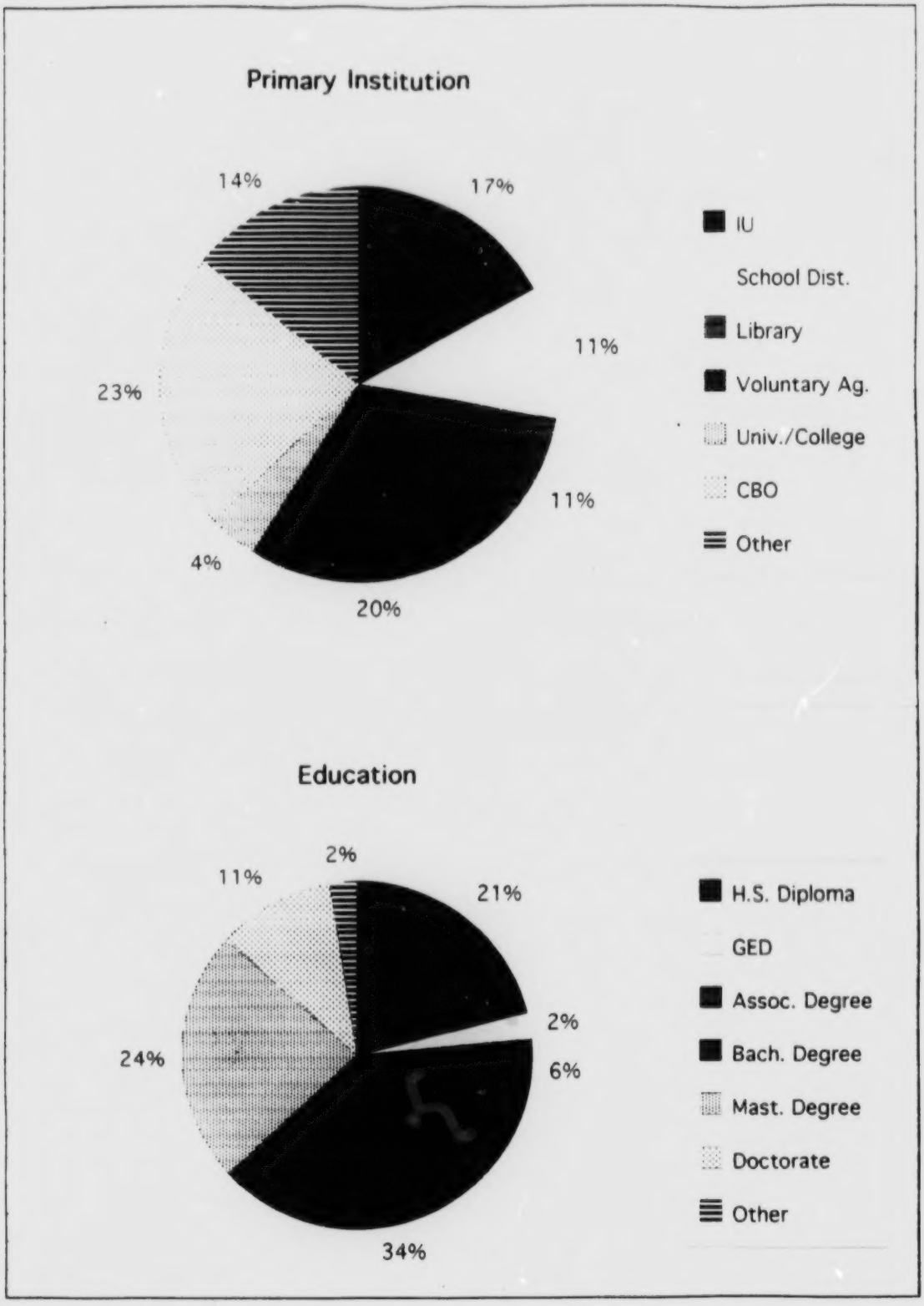
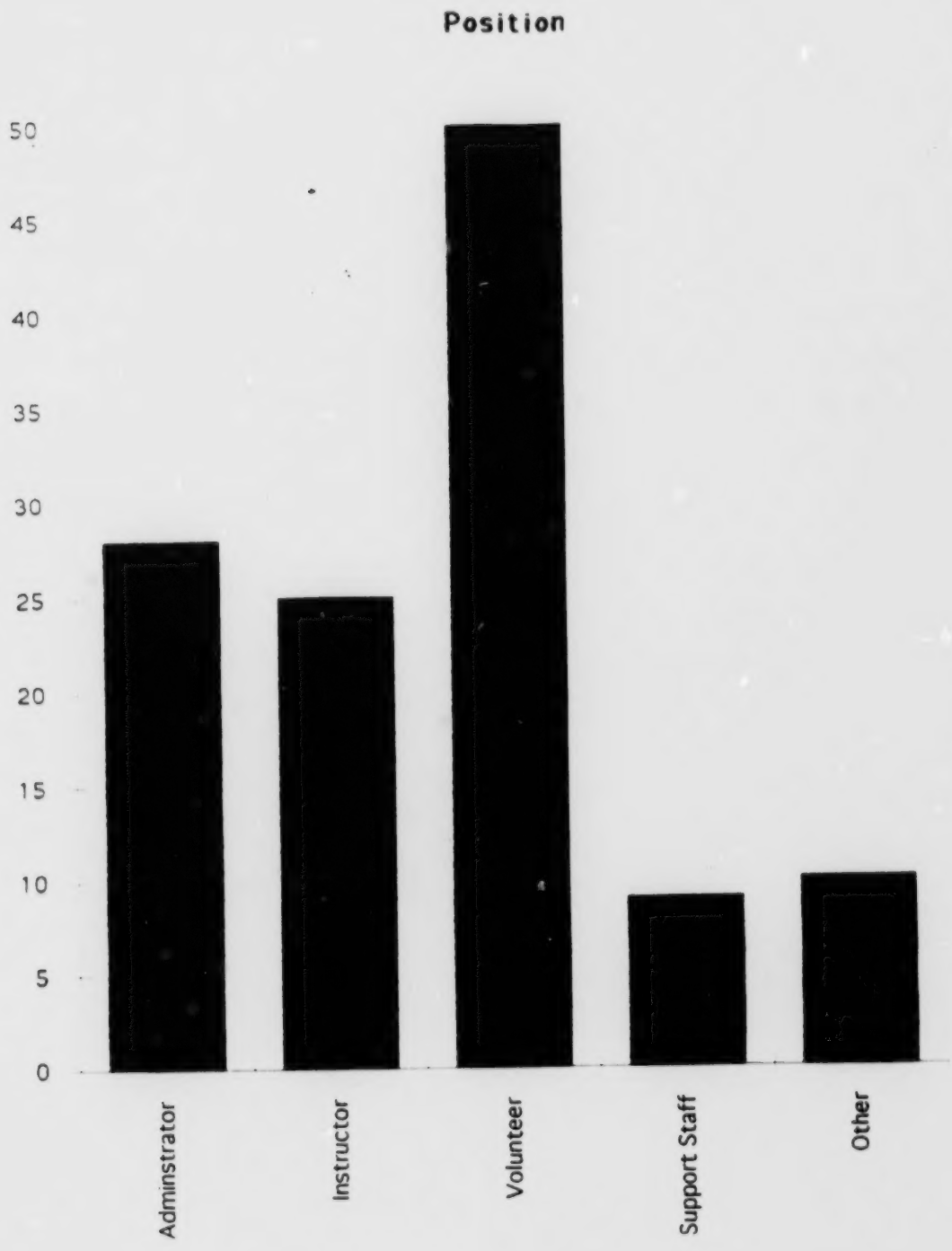
[1]. It must be noted that about twenty people who chose not to participate did return their surveys with comments. The comments were of two kinds: 1) some of the persons on the mailing lists were no longer involved in literacy work, 2) Others stated that they had received far too many surveys from the State PDE and from their own regions, and they were not going to answer more.

Administrators and teachers/staff obviously spent more time in staff development, traveled to get to staff development, and perceived a need for more staff development. Volunteers, on the other hand, did not participate as much in staff development and felt they had adequate staff development. There were very different views between volunteers and teachers/staff on what training, of any kind, was needed. Volunteers felt they had enough training in 78% of the cases; whereas, teachers/staff said they had adequate training in 65% and 57% of the cases respectively. Most importantly for this study, volunteers said if they would attend staff development, 72% of them would travel just 1/2 hour to get to the place where staff development was delivered. This is in sharp contrast with the administrators (86%) and teachers/staff(77%) who would travel 1/2 hour. Furthermore, thirty-nine percent and thirty percent of administrators and teachers/staff, respectively, would travel two hours for staff development (see Table 1 below).

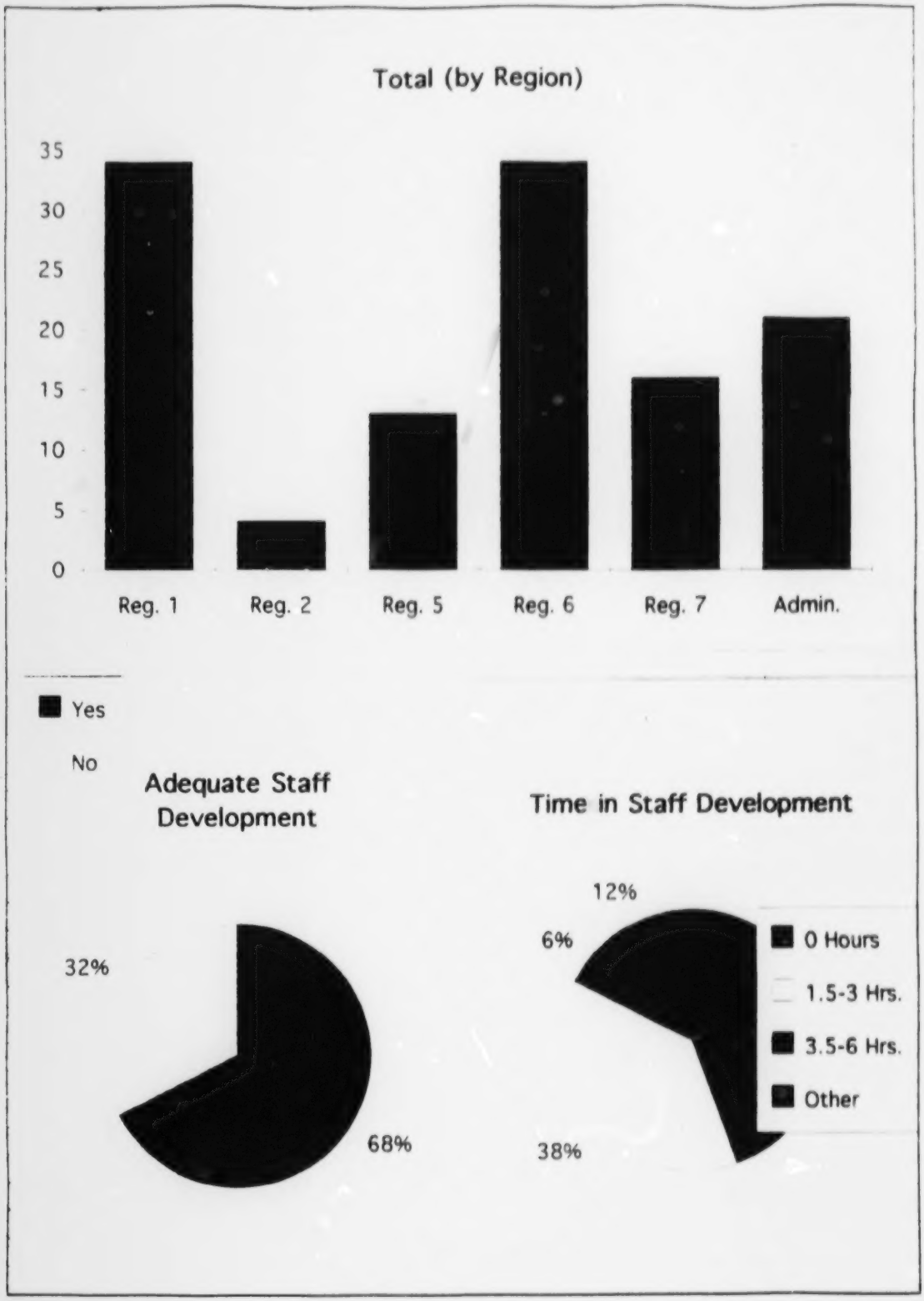
Worksheet1


Primary Institution
14%
17%
11%
23%
11%
4%
20%
IU
School Dist.
Library
Voluntary Ag.
Univ./College
CBO
Other
Education
2%
11%
21%
2%
24%
6%
34%
H.S. Diploma
GED
Assoc. Degree
Bach. Degree
Mast. Degree
Doctorate
Other

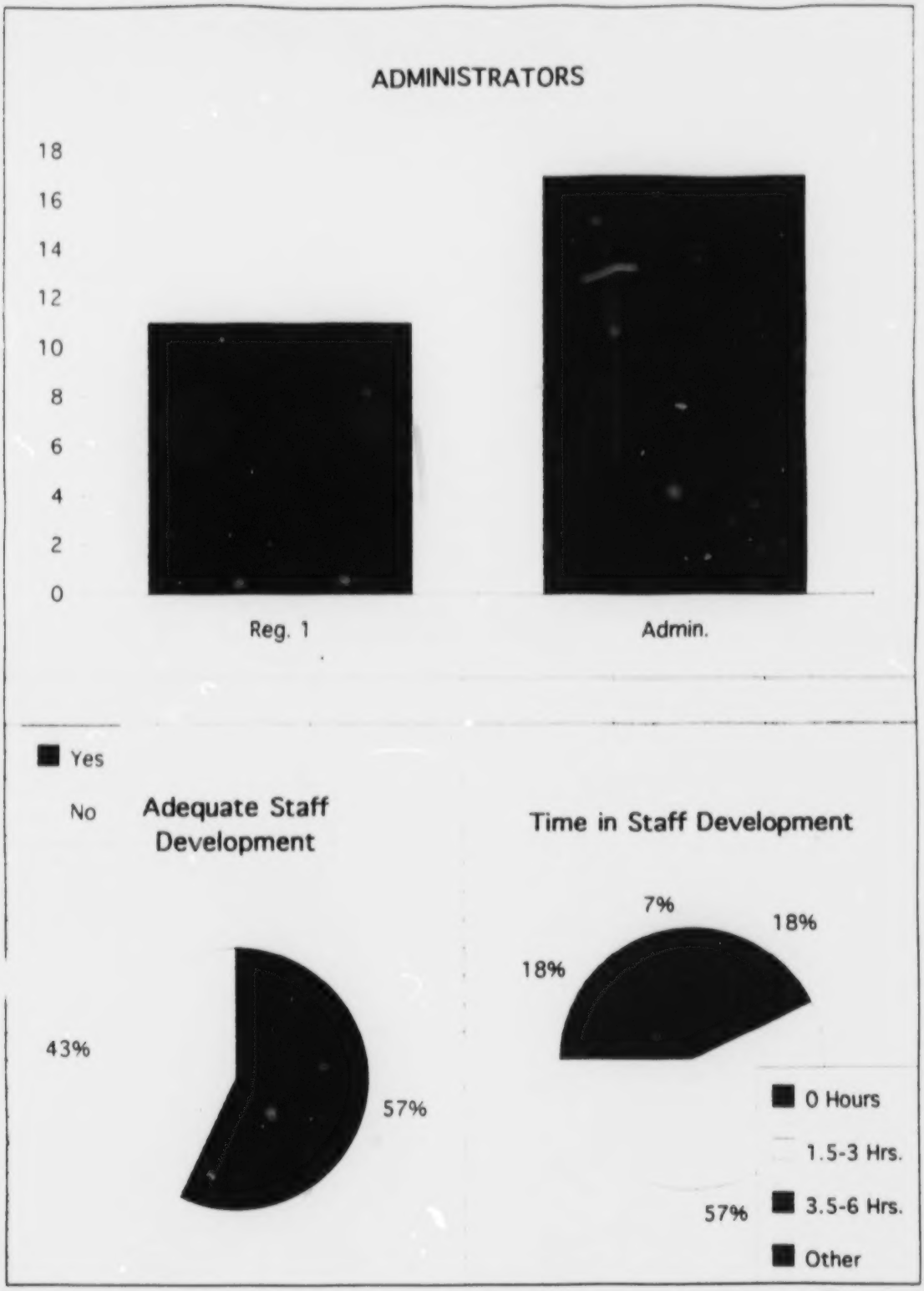
Positions of Total N Chart 1



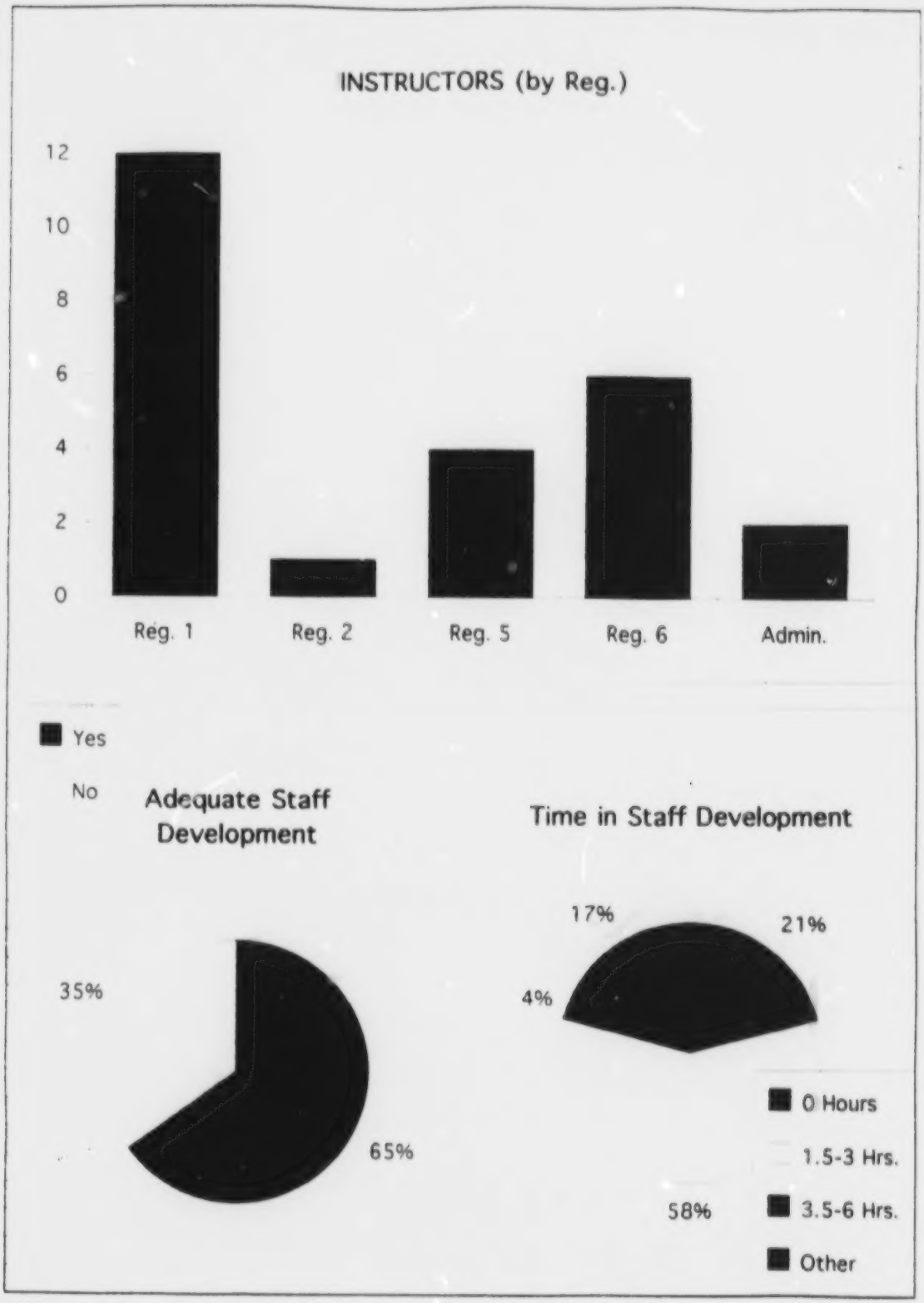
Total Charts



Admin Charts



Instructors Charts



Volunteer Charts

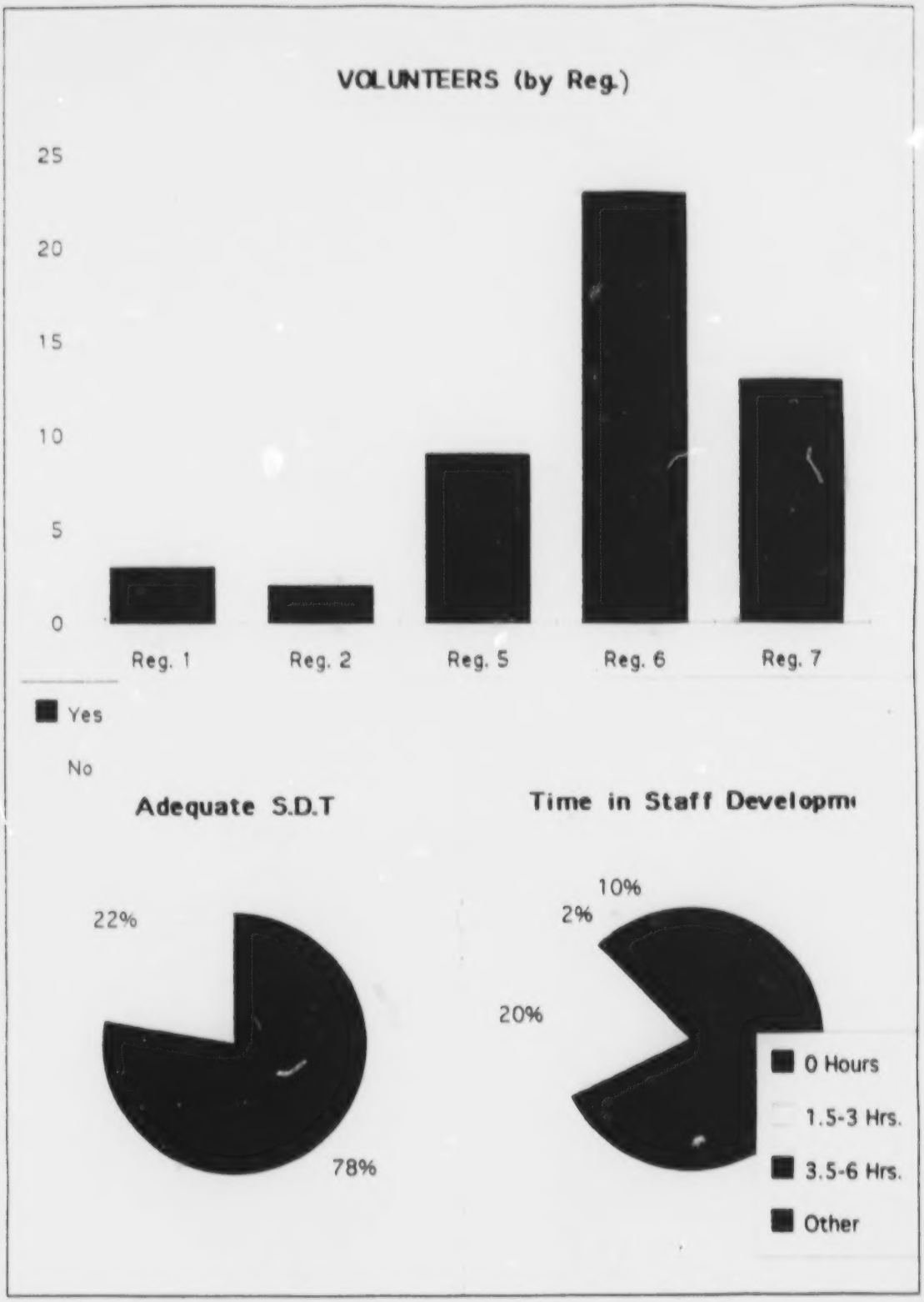


Table 1: Staff Development Data

		A	T/S	V
Impt of staff development to me.		50%	57%	44%
Adequate staff development		57%	54%	78%
SD hours per month	0	18%	34%	68%
	1/2 - 3	57	45	20
	31/2 -6	18	2	2
	other	7	16	10
Travel regularly to SD		75%	45%	22%
Do not travel regularly		21%	52%	76%
If travel regularly, miles of regular SD travel	1 - 25	n5	n6	n11
	26 - 60	8	9	1
	61 - 85	7	0	0
	86 -110	2	2	0
	110+	2	4	0
Need more SD		61%	61%	48%
Will travel 1/2 hr for SD		86%	77%	72%
Will travel 2 hrs for SD		39%	30	14%

b. Survey Responses on Access to & Attitudes about Technology for Staff Development:

Access to equipment for distance education delivery is problematic. Clearly, the most available equipment is video cameras and VCR's (See Table 2) with more than 70% of administrators and teachers/staff noting access to the equipment for staff development. Because of these numbers, and the low response from volunteers, it would appear that volunteers are not aware of the existence of such equipment. The volunteer response also raises the issue of whether this equipment has been used at all for volunteer training. Video conferencing and audio conferencing equipment and

computers with modems computers with modems are, by comparison, significantly less available for staff development (it must be noted, that at times it appears respondents crossed the notion of use of video cameras, VCR's, etc. with that of interactive video conferencing, the "combination of audio and video media to link people in different places by voice and with television pictures" (Mabry, 1987, p. 20)).

The Advisory Panel felt that the respondents have had two experiences. They have used VCR's and video cameras and have attended large teleconferences where a program was beamed in by satellite. The panel felt that most of the respondents had not engaged in teleconferencing where a totally interactive session is carried on between participants at two or more sites (see Table 2 below).

Table 2: Access to Technology for Staff Development

	A	T/S	V
Audio conferencing equipment	32%	27%	12%
Computer with modem	29%	14%	4%
Video taping, etc. equipment	89%	66%	34%
Video conferencing equipment	36%	41%	18%

Attitudes toward use of distance education for delivery of staff development were positive for administrators' and teachers/staff (see Table 3). Forty to 50 % of the volunteers expressed support for the use of technology. While there was not a great difference between subjects' feelings on the technologies to be used for staff development, there were clear distinctions between technologies when the comfort levels were looked at with each medium (and see Table 3 below).[2]

[2] Regrettably, the survey neglected to ask people's comfort with learning with audio-conferencing. This can be surmised; however, in the next section when considering skills necessary for using each of the technologies.

Table 3: Attitudes Toward Use of Technology

		A	T/S	V
Use audio for SD		75%	66%	42%
Use computer for SD		75%	59%	46%
Use video (tapes, conferencing, etc. for SD		86%	57%	52%
Comfort learning with computers	SA-A	68%	48%	38%
	D-SD	11%	25%	10%
	NE	3%	11%	28%
Comfort learning with video	SA-A	61%	57%	52%
	D-SD	14%	7%	14%
	NE	4%	5%	4%

Based on these data concerning "comfort levels" with various media, administrators are slightly more comfortable with computers than video. Teachers/staff are slightly more comfortable with video than computers. These findings may reflect the fact that administrators work more with computers while teachers are more likely to use video cameras, etc. Clearly, volunteers record much less comfort with computers than with video overall.

D. Survey Responses Concerning Skill Support and Training Needed for the Use of Technology for Staff Development:

Several questions in the survey were designed to assess whether the respondents had the skills which would contribute to successful use of each of the particular mediums. For example, speaking on the phone, sharing information on the phone, etc. are skills which would be

helpful to one's participation in an audio-conference. Many skills necessary for successful engagement in audio-conferencing were possessed by all three subject groups. These included speaking on the phone, participating in conference calls, receiving and giving information over the telephone, understanding inf ation without seeing the speaker, learning information over the phone, learning in groups, acting on directions received over the phone, and interacting with people without seeing them.

Several other areas of skills for audio-conferencing demand particular training. First, people in all role groups (18%, 20% and 12% respectively) had aversion to using a microphone. Speaking to a group using a microphone was more uncomfortable yet (25%, 23%, 18%).

Skills supporting computer/modem use for staff development varied across the role groups. As would be expected, administrators had worked most with computers (75%), teachers/staff were next (59%), followed by volunteers (48%). Even more of a spread occurred when questioned about comfort "tinkering" with computers (61%, 52%, 28%) The three role groups had high comfort levels with the skills of typing, writing and letter writing.

Because of lack of experience, training is needed for

computer use to deliver distance education in the following areas: working on a computer (0, 25%, 30%), understanding computer technology (3%, 23%, 26%), using computers to send information (28%, 39%, 52%), using computers to receive information (25% 39%, 48%), writing to an electronic bulletin board (50%, 57%, 58%), and questioning persons on the computer (39%, 54%, 54%). Additionally, people must be helped to become comfortable with interacting with people without hearing them. Respondents were either uncomfortable with this (7%, 14%, 12%) or had not experienced this (21%, 32%, 24%).

As with audio conferencing, so too in computer-conferencing, the issue of interacting with people without seeing them must be addressed. Discomfort with this was noted (3%,(9%,8%), as was a lack of experience with this method (18%, 14%, 12%).

Skills supporting <u>video</u> use which were strongly possessed included receiving information from TV, listening to others via tape, watching instructional TV. While, speaking in public received an adequate rating (61%, 59%, 54%), it must also be noted that enough people were uncomfortable speaking in public to merit further training in this skill (21%, 14%, 18).

A number of aspects needed significant further training to support video use. The training aspects were needed either because of extreme discomfort with particular skills or, similarly to the computer-conferencing training, because of no experience with particular skills. The needs included extreme discomfort with seeing oneself on video-tape (32%, 27%, 24%), seeing oneself on live TV (28%, 30%, 28%), listening to ones own voice on tape (36%, 20%, 22%), speaking on live TV (14%, 20%, 20%), and discomfort seeing oneself on live TV (14%, 20%, 20%). Other persons had no experience with seeing oneself on video-tape (7%, 14%, 14%), seeing oneself on live TV (7%, 11%,16%), speaking on "live" TV (32%, 36%, 42%), attending a video conference (39%, 36%, 42%), and learning via a video conference (43%, 43%, 52%).

12. Summary and Conclusions:

It was clear from the data that there was a difference between the tutors and the teachers/staff on the issue of how much staff development these two groups thought were necessary for themselves and how they perceived their commitment to be involved in more staff development. Teachers/staff were willing to travel further and were generally more open to staff development than were tutors. There was little experience in audio conferencing per se although the "comfort level" was high with this medium (note also discomfort with the use of microphones and the apparent

need for more public speaking experience).

In the case of video, where interactive video-conferencing was concerned, there was little experience and, again, very little experience on computer conferencing. The comfort levels of teachers/staff was somewhat higher on the use of video since, probably, they had used this equipment fop play-back on their jobs. Administrators, however, had higher comfort levels with computers.

In all cases, there was limited knowledge and experience in any of the three scenarios discussed (below)": Audio-conferencing, video-conferencing, computer-conferencing.

The comfort levels with audio point to a potential to use this medium as "user-friendly" among teachers/staff, and use the others as enhancements to audio-conferencing. It was also clear that there was considerable video equipment in program centers or accessible to those centers--surprisingly, tutors had seemed to have had little or no access to this equipment and, again surprisingly, this equipment had not been used much by the teachers/staff themselves in their own professional development.

The same was true of computers. Many had or had access to pc's but few had ever been involved with computer

conferencing.

Thus, where the comfort level was high (audio), the equipment for making this the lead system was low (few audio-conference systems were reported).

A. Recommendations:

At the outset of this report, it was suggested that three scenarios would be given for policy consideration of the use of interactive distance education technology for professional staff development in the literacy field. The fact that two distinct groups emerged as the "target group"--tutors and teachers/staff--create an unanticipated dimension of the report. Namely, a one "one size fits all" system of interactive distance education might not be either possible or efficacious. What is suggested is a Phase-In process relying on the more committed teachers/staff to take the lead in a Demonstration Model implementation of audio later accompanied by computer and video. This approach is suggested both because of the comfort/acceptance of the various media in the field and the relative cost of implementing the other scenarios. What is given, then, is the three scenarios as discussed, followed by the Demonstration Model and its suggested phase-in for implementation.

B. Three Scenarios for Interactive Distance Education .n Pennsylvania:

Scenario #1: **Minimal Cost/Minimal Training:** Interactive audio necessitating only telephone hook-ups, interactive speaker systems, e.g., Darome units, with print reading materials. [3]

In this scenario, a set of audio-conference equipment is approx. $1,000 and one-two sets per center would be adequate (see Demonstration Model below). Implementing these per each Staff Development center would permit state-wide training, workshops and meetings to take place as well as region-wide workshops and meetings. Only telephone lines are required. Thus, in the 7 regions, all 7 could have basic equipment (see below) for approx. 14,000.

However, the audio systems alone are very minimal. Visuals (e.g., graphs, overheads, figures) are difficult and need to be mailed in advance. The system is as good as the telephone lines technically and there are periodic problems here but the greater need would be some basic training in speaking into a microphone at a table and listening through a speaker system (see below).

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[3] This system is used regularly and effectively at Penn State in several graduate programs, including Adult Education.

Thus, scenario one would be the least expensive but would be better enhanced with at lest limited use of the other media (see below).

#2 Optimal: Interactive audio (as in Scenario One) supplemented with audio graphics (e.g. electronic blackboards) plus print reading materials mailed out and video tapes mailed out. Also, instruction supplemented with computer conferencing using existing personal computers and modems.

This is "optimal" because it supplies the visual component missing with Scenario One alone. It builds on the pc's now available and the video equipment now in place. But, increased training would be required to be sure the electronic blackboards and audio graphics are used well. Also, the pc's will need modems added for transmission and these too will need some training and technical programming. With this, the cost would at least triple (e.g., $57,000) to add the audio graphics systems and the computer modems.

Scenario #3 **Maximum:** Portions of the above with interactive video/audio at locations connected to satellite down-link transmission in local facilities and satellite uplink technology at some central site (e.g., PDE or Penn State, University Park). This would provide visual exchange

through the use of satellite. But, use of satellite time through downlink can be expensive depending on the arrangements made but the uplink time and the program set up/development time can be very costly. This is used by industry and government for a wide audience and often on a "one-shot" basis because of the cost and the technological problems which can accompany this approach.

C. Proposed Implementation of Recommendations

Based on the outcomes of the study--on the availability of various equipment in rural Pennsylvania; on the familiarity and willingness of practitioners to make use of various technologies; on the "comfort level" of practitioners (see Figures) with various technologies; and on the evident willingness of practitioners to become trained to use and make use of various technologies (see Total Charts and Admin, Instructor, Volunteer charts), it is clear that there is interest and willingness to use and be trained in the use of interactive audio systems, even though there is little audio conference equipment available now, according to the data.

By inverse ratio, there is considerable video play-back equipment and, secondly, computer equipment available. However, there are reported data of acute concern (e.g., anxiety) over the use of these equipment. It is also clear

that such equipment in teaching facilities is not used extensively for staff development--either by the teachers/staff who are at these locations or by the tutors who are in the surrounding communities.

Thus, it becomes apparent that if P.A. desires both highly centralized systems for state-wide usage and highly decentralized delivery systems for the training of local literacy practitioners, such can be achieved and the phase in of the following plan over a two year period is proposed to achieve this:

C.1 Implementing a Demonstration Model

Since part-time teachers were more receptive to and committed to professional development than literacy volunteers, it is suggested, at least in the short run, that part-time teachers be targeted for the first phase of the implementation of a distance education literacy plan across the 7 rural regions, and that the Staff Development Centers and staff at those Centers be given the leadership in this .

C.2 Timing: Phase One

This plan, it is suggested, should be implemented by all rural Staff Development Centers (Group One of Trainees) which would, in turn, select a small number of geographic

locations of part-time teachers (Group Two of trainees) to participate in distance education. This is a basic "demonstration model" strategy. The demonstration might consist of 1-3 sites per region with part-time teachers being willing to participate and take the next leadership step. These part-time teachers, according to this study, were typically either unwilling or, more likely, unable to travel any major distance to participate in professional development, although they wanted to gain more knowledge and skills.

The central offices in each rural region would have acquire the audio conferencing technology (the most inexpensive of the scenarios) and, it is proposed, they would attend 2 introductory training workshops. The first at a training site to give experience and basic expertise in the use of audio conferencing (e.g., Penn State Adult Education program or Lackawanna Community College are examples of locations using this technology regularly). The second session would be conducted to their own site using the audio technology and the host trainer would be from the same centralized location (e.g., Penn State Adult Education program or Lackawanna Community College).

Shortly thereafter, still in the first phase, a workshop and/or meeting would be conducted, possibly out of

Harrisburg PDE, to all central Staff Development offices to reinforce the use of the system and begin to develop the full capacity for both centralized and decentralized systems. This would be a "pilot" involving the Group One of Co-ordinators and Directors. It could also involve the selected teachers/staff, depending on the comfort level of Group One.

C.3 Timing: Phase Two

The seven Staff Development Centers would begin delivering training to part-time teachers. When appropriate, the central Staff Development group would hold meetings and needs assessments by audio conferencing to build confidence in the audio system among the part-time teachers.

C.4 Timing: Phase Three

These demonstrations to part-time teachers would be soon made available to literacy tutors (Phase Three) in the surrounding regions of the demonstration projects (literacy tutors were less willing to travel or become engaged in professional development).

Thus, the first phase would build expertise among the Co-ordinators and establish a centralized system. Phase two would build a number of concentric circles of part-time teachers and, in Phase Three, a second series of concentric

circles around those of part-time literacy teachers would be developed. The Co-ordinators would demonstrate first and the part-time teachers/staff would follow to demonstrate for the tutors. Through the three tiers, expertise would be given through the locations of greatest receptivity to distance education.

In most cases, the decentralized equipment would remain at the part-time teachers' locations and part-time teachers would be encouraged to continually play a part in helping tutors use the audio system. What was begun by the central Staff Development training would be modelled through the part-time teachers to the literacy tutors.

Professional development specifically targeted to the tutors or teachers/staff would follow in phase 3 so the seven central Staff Development centers would build outward through local training and centralized and from PDE, for example, as appropriate.

C.5 Timing: Phase Four

Thereafter, e.g., Phase Four, during year three, audio graphics and computer technology could be added using the same model, if scenario #2 was accepted.

D. Equipment Acquisition:

Since no central Staff Development offices reported that they already had the basic audio systems, such would need to be acquired (probably under 353 special grant funding) in order to put in place standard equipment (approx. $1,000 for 4 microphones and speaker; or for one directional microphone and speaker).

E. Benefits from each Phase:

After the first year, PA would have:

·7 central Staff Development offices would be linked by audio-conferencing systems. If PDE acquired the same equipment, a centralized system would be in place for both training and meetings state-wide at approx. $8,000 (7 x $1,000 + $1,000) or, if as many as all sites acquired two sets or extra microphones at approx. the same cost, the total maximum for a state-wide stem would be $16,000.

This would give up to 21 (7 x 2-3) part-time teacher demonstration sites across rural PA and over 21 tutor networks as associated with the 21 teacher sites.

·An inventory of existing equipment in each central site as accessible to each central Staff Development office for further expansion of distance education would be prepared. For instance, this study revealed a high willingness to learn how to

use video for distance education and a high level of video equipment. However, for interactive distance education, what downlink facilities are available? How accessible are such satellite dishes to each Staff Development center? What are the user costs for satellite dishes? What uplink capacity does PDE have? What capacity does Penn State University have to reach these by Penn Link and other such systems and what is the cost? What other interactive satellite delivery systems are available from outside of Pennsylvania and at what cost?

If a basic audio system were in place after the first year and an full inventory developed, decisions could be made as to the next step. It is recommended, however, that the following proposal be considered for the third phase:

·Depending on available funding in this year, the audio systems could be upgraded with the addition of audio graphics equipment which, in turn, provides visual images to enhance the audio conference systems.

·Depending on the availability of local equipment, it is proposed that either computer networks be developed through the same "demonstrations model" discussed

above, to develop the satellite video systems. It is normally found the use of satellite can be prohibitively expensive on anything but an infrequent basis but this infrequent basis is worth exploring since nation-wide training programs do become available at little or no cost and PA should be in a position to take part in this uniformly.

F. Inventory Still Required:

During phase one, a technology specialist would visit each rural central office over the course of the year and conduct an inventory of other equipment already existing and accessible for increasing technology usage out of the central offices. This inventory would inform Phase Two through Phase Four for the need for more equipment.

This study revealed that a good deal of basic video playback equipment exists as does personal computer equipment. The required technology to make these effective <u>interactive</u> systems would need to be further assessed.

To conclude this proposal, the basis for a steering committee has been formed through this project among the Co-ordinators. With added expertise on technology and the implementation of such systems, a Literacy Distance Education Committee could be established to guide the progress and evaluate the success of the

project. The objectives, it would need to be remembered, would be to put a system in place which was widely used, which could be used for uniform, state-wide training or meetings, and which could reach the most remote sites for training too. If those sites had a telephone line, or access to one, the above proposal would be workable.

13. Dissemination of Findings:

Copies of this report are available for the next five years at the following addresses:

·Department of Education
Commonwealth of Pennsylvania
333 Market Street, HARRISBURG, PA.
17126-0333

and

·AdvancE
333 Market St
HARRISBURG, PA.
17126-0333

APPENDIX A: CO-ORDINATORS CONTACTED IN THE SEVEN RURAL REGIONS

REGIONAL STAFF DEVELOPMENT PROJECT DIRECTORS AND COORDINATORS

Region 1 -
Richard Gacka
Bootsie Barbour
Northwest Tri-County IU #5
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Region 2
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Region 3
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Region 5
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Randy Varner
TIU #11
Adult Education and Job Training Center
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Region 6
Beverly Smith
Faye E. Schirato
Immigration & Refugee Services of Catholic Charities
Diocese of Harrisburg
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Region 7
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Jane Ditmars
Tri-Valley Literacy Resource Center
Lehigh University
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Region 8
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610 King of Prussia Road
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APPENDIX B: STATISTICS FROM RESPONSES

Grant Report TN= 122

Position		Administrator (N=28;23%)		Teacher/staff (N44;36%)		Volunteer (N50;41%)	
		N	%	N	%	N	%
5. adq sd	Y	16		24		39	
	N	12		15		11	
6. time sd	0hr	5		15		34	
(mthly)	1/2-3	16		20		10	
	31/2-6	5		1		1	
	other	2		7		5	
7. travel reg	Y	21		20		11	
	N	6		23		38	
If yes	1-25mi	5		6		11	
	26-60	8		9		1	
	61-85	7		0		0	
	86-110	2		2		0	
	111+	2		4		0	

8. access	Y	11	11	15
cmpt/modem	N	17	31	35
ABE resp.				
(Y)do use	Y	9	8	6
- work	N	1	7	11
(N)would	Y	14	23	16
use-wk	N	1	9	18
9. access	Y	8	6	2
cmpt/modem	N	20	36	38
sdev.				
(Y)do use	Y	3	2	2
sd	N	3	5	1
(N)would	Y	16	24	22
use-sd	N	3	10	12
10. access	Y	23	31	16
video-wk	N	5	11	28
(Y)do use	Y	19	18	4
wk	N	5	13	13
(N)would	Y	3	6	16
use-wk	N	1	1	11

		Administrator		Teacher/staff		Volunteer	
		N	%	N	%	N	%
11. access	Y	25		29		17	
video-sd	N	2		13		19	
(Y)do use	Y	19		19		9	
sd	N	6		10		8	
(N) would	Y	1		8		8	
use-sd	N	1		7		10	

Strongly Agree-Agree (SA-A); Neutral (N); Disagree-Strongly Disagree (D-SD); No Experience (NE).

		Administrator		Teacher/Staff		Volunteer	
		N	%	N	%	N	%
a. need more sd	SA-A	17		27		24	
	N	8		11		15	
	D-SD	3		3		10	
	NE	0		2		1	
b. learn well in groups	SA-A	23		32		39	
	N	3		9		9	
	D-SD	2		1		2	
	NE	0		1		0	
c. will travel 1/2hr sd	SD-A	24		34		36	
	N	4		7		11	
	D-SD	0		2		3	
	NE	0		0		0	
d. comfort w/ cmptr use	SD-A	19		21		19	
	N	5		6		12	
	D-SD	3		11		5	
	NE	1		5		14	

e. learn well lectures	SA-A	17	23	24
	N	10	13	11
	D-SD	1	6	4
	NE	0	1	0
f. learn well listening	SA-A	19	23	37
	N	7	14	6
	D-SD	2	6	7
	NE	0	0	0
g. enjoy class room learn.	SA-A	23	31	40
	N	5	10	9
	D-SD	0	2	1
h. like to use cmptr more	SA-A	18	29	31
	N	4	12	13
	D-SD	6	0	3
	NE	0	2	3
i. comfort. learn with video	SA-A	17	25	26
	N	6	13	14
	D-SD	4	3	7
	NE	1	2	2

		Administrator		Teacher/Staff		Volunteer	
		N	%	N	%	N	%
j. like to use video more	SA-A	13		14		19	
	N	11		23		22	
	D-SD	3		2		5	
	NE	0		3		3	
k. learn well reading	SA-A	24		35		49	
	N	3		5		1	
	D-SD	1		2		0	
	NE	0		0		0	
l. learn well by self	SA-A	22		33		47	
	N	5		9		2	
	D-SD	1		1		1	
	NE	0		0		0	
m. learn well seeing	SA-A	26		34		44	
	N	2		8		3	
	D-SD	0		1		3	
	NE	0		0		0	
n. will travel 2hrs-sd	SA-A	11		13		7	
	N	8		12		15	

	D-SD	9	15	28
	NE	0	3	0
o. not mind	SA-A	16	21	27
public	N	7	9	11
speaking	D-SD	4	11	11
	NE	1	2	1
p. sd impt	SA-A	26	30	33
to me	N	0	8	12
	D-SD	1	3	3
	NE	0	2	1
q. TV good	SA-A	20	30	30
educ. tool	N	5	10	13
	D-SD	2	3	4
	NE	0	0	2
r. my perf.	SA-A	27	38	42
improves	N	1	3	7
w/ train.	D-SD	0	0	0
	NE	0	2	0

		Administrator		Teacher/Staff		Volunteer	
		N	%	N	%	N	%
s. learn well by doing	SA-A	14		43		39	
	N	5		1		0	
	D-SD	4		0		0	
	NE	5		0		0	
t. my program absorbs sd costs	SA-A	14		25		22	
	N	5		8		11	
	D-SD	4		4		7	
	NE	5		6		8	

Very Comfortable-Comfortable (VC-C); Neutral (N); Uncomfortable-Very Uncomfortable (UC-VU); No Experience (NE).

		Administrator		Teacher/Staff		Volunteer	
		N	%	N	%	N	%
a. speaking on phone	VC-C	22		34		38	
	N	4		6		6	
	UC-VU	2		1		3	
	NE	0		3		3	
b. confer. call	VC-C	16		24		25	
	N	3		7		5	
	UC-VU	0		3		6	
	NE	9		10		14	
c. microphone use	VC-C	15		19		29	
	N	4		11		8	
	UC-VU	5		9		6	
	NE	4		5		7	
d. receiv. tele info	VC-C	22		33		38	
	N	5		5		6	
	UC-VU	1		4		4	
	NE	0		2		2	

e. giving info	VC-C	25	31	40
on phone	N	3	9	6
	UC-VU	0	2	2
	NE	0	2	2
f. speaking	VC-C	16	21	23
1+ person	N	3	8	12
on phone	UC-VU	2	3	7
	NE	7	12	8
g. acting on	VC-C	21	29	36
directions	N	3	11	8
received	UC-VU	3	1	4
over phone	NE	1	3	2
h. sharing	VC-C	16	22	26
info	N	3	5	8
during	UC-VU	0	3	4
conf.call	NE	9	14	12
i. underst.	VC-C	20	29	35
info w/out	N	5	9	10
seeing	UC-VU	3	4	4
speaker	NE	0	2	1

		Administrator		Teacher/Staff		Volunteer	
		N	%	N	%	N	%
j. speaking in group	VC-C	21		28		32	
	N	4		7		8	
	UC-VU	3		7		9	
	NE	0		2		1	
k. learning in group	VC-C	24		37		43	
	N	3		3		5	
	UC-VU	1		2		5	
	NE	0		2		1	
l. speaking to group using microphone	VC-C	14		20		32	
	N	3		9		8	
	UC-VU	7		10		9	
	NE	4		5		1	
m. learning info over phone	VC-C	18		27		30	
	N	8		11		12	
	UC-VU	2		2		5	
	NE	0		4		3	
n. questioning	VC-C	21		31		31	

info	N	4	8	14
received	UC-VU	3	0	2
over phone	NE	0	5	3

Very Comfortable-Comfortable (VC-C); Neutral (N); Uncomfortable-Very Uncomfortable (UC-VU); No Experience (NE).

		Administrator		Teacher/Staff		Volunteer	
		N	%	N	%	N	%
a. working on computer	VC-C	21		26		24	
	N	5		4		7	
	UC-VU	2		3		4	
	NE	0		11		15	
b. learning to use a computer	VC-C	23		29		31	
	N	4		8		7	
	UC-VU	1		0		2	
	NE	0		7		10	
c. cmptr use as 1 pt of sd	VC-C	22		29		28	
	N	4		3		3	
	UC-VU	1		1		5	
	NE	1		11		14	
d. cmptr use to send info	VC-C	13		18		14	
	N	5		6		4	
	UC-VU	2		2		6	
	NE	8		17		26	

e. cmptr use	VC-C	16	19	16
to receive	N	4	6	4
info	UC-VU	1	2	6
	NE	7	17	24
f. typing	VC-C	22	35	34
	N	4	4	6
	UC-VU	2	2	6
	NE	0	3	4
g. "tinkering"	VC-C	17	23	14
w/cmptrs	N	4	6	14
	UC-VU	5	5	6
	NE	2	10	16
h. writing	VC-C	24	29	38
	N	1	10	6
	UC-VU	2	1	4
	NE	0	4	2
i. understd	VC-C	17	17	20
cmptr	N	5	9	11
technology	UC-VU	5	8	6
	NE	1	10	13

		Administrator		Teacher/Staff		Volunteer	
		N	%	N	%	N	%
j. writing to electronic bulletin board	VC-C	8		4		9	
	N	5		8		5	
	UC-VU	1		7		6	
	NE	14		25		29	
k. interact. w/out seeing people	VC-C	16		24		26	
	N	6		10		14	
	UC-VU	1		4		4	
	NE	5		6		6	
l. interact. w/out hearing people	VC-C	13		15		16	
	N	7		9		16	
	UC-VU	2		6		6	
	NE	6		14		12	
m. letter writing	VC-C	23		32		35	
	N	2		9		6	
	UC-VU	2		1		5	
	NE	1		2		4	
n. question. persons on	VC-C	15		12		15	
	N	1		5		2	

the cmptr.	UC-VU	1	3	6
	NE	11	24	27

Very Comfortable- Comfortable (VC-C); Neutral (N); Uncomfortable-Very Uncomfortable (UC-VU); No Experience (NE).

		Administrator		Teacher/Staff		Volunteer	
		N	%	N	%	N	%
a. seeing self on video-tape	VC-C	9		12		12	
	N	8		14		18	
	UC-VU	9		12		12	
	NE	2		6		7	
b. seeing self on TV	VC-C	9		12		11	
	N	9		14		16	
	UC-VU	8		13		14	
	NE	2		5		8	
c. receiving info from TV	VC-C	21		31		7	
	N	4		7		5	
	UC-VU	0		1		3	
	NE	2		5		4	
d. viewing sd on TV	VC-C	23		24		35	
	N	2		7		7	
	UC-VU	1		4		3	
	NE	1		9		4	

e. listening	VC-C	12	18	22
to own	N	5	12	13
voice on	UC-VU	10	9	11
tape	NE	1	5	3
f. attending	VC-C	13	17	15
video conf.	N	4	9	10
	UC-VU	0	2	3
	NE	11	16	21
g. talking on	VC-C	17	25	24
answering	N	6	10	16
machines	UN-VU	5	4	5
	NE	0	5	4
h. learning	VC-C	16	22	20
via"live"	N	4	8	10
TV	UC-VU	0	0	18
	NE	8	14	1
i. learning	VC-C	12	20	13
via video	N	4	4	9
conf.	UC-VU	0	1	1
	NE	12	19	26

		Administrator		Teacher/Staff		Volunteer	
		N	%	N	%	N	%
j. speaking on "live" TV	VC-C	11		11		8	
	N	4		8		9	
	UC-VU	4		9		10	
	NE	9		16		21	
k. speaking in public	VC-C	17		26		27	
	N	5		9		10	
	UC-VU	6		6		9	
	NE	0		3		3	
l. learning via "live" TV	VC-C	19		25		24	
	N	2		7		12	
	UC-VU	0		2		1	
	NE	7		10		12	
m. listening to others via tape	VC-C	26		31		36	
	N	4		8		8	
	UC-VU	1		2		4	
	NE	0		3		1	
n. watching instruct.	VC-C	24		33		40	
	N	3		6		5	

TV	UC-VU	1	2	2
	NE	0	3	2
o. listening	VC-C	11	20	36
to self on	N	6	10	8
answering	UC-VU	7	8	4
machines	NE	4	6	1

		Administrator		Teacher/Staff		Volunteer	
		N	%	N	%	N	%
a. access to audio-conf equipmt.	Y	9		12		6	
	N	12		20		27	
	?	7		12		15	
If Yes, ? access equip.	IU	1		5		5	
	SchDist	4		2		0	
	Lib	0		3		1	
	Vol.Ag	0		0		1	
	Univ	2		2		0	
	Comm	1		0		0	
	PrivAg	0		0		0	
	Region	0		0		0	
	Prsnl	1		1		0	
	Other	0		0		0	
b. willing to participate in sd via audio conf	Y	21		29		21	
	N	7		14		24	
c. access to	Y	7		7		10	

cmptr	N	15	27	23
equip	?	6	9	15
If yes,	IU	1	3	2
? access	SchDist	2	0	2
equip.	Lib	0	3	2
	VolAg	0	0	1
	Univ	2	1	1
	Comm	0	0	1
	PrivAg	0	0	0
	Region	0	0	0
	Prsnl	2	1	1
	Other	0	0	1
d. willing to	Y	21	26	23
participate	N	7	15	24
in sd via				
cmptr conf				
e. access to	Y	10	18	9
video conf	N	11	14	24
equip	?	7	10	14

		Administrator		Teacher/Staff		Volunteer	
		N	%	N	%	N	%
If yes,	IU	0		9		3	
? access	SchDist	5		2		1	
equip	Lib	0		3		2	
	VolAg	0		2		1	
	Univ	3		3		0	
	Comm	2		1		1	
	PrivAg	0		0		0	
	Region	0		0		0	
	Prsnl	1		0		0	
	Other	1		0		1	
f. willing to participate in sd via video conf	Y	24		25		26	
	N	4		15		19	

APPENDIX C: LITERATURE REVIEW OF LITERACY STAFF DEVELOPMENT BY DISTANCE EDUCATION IN THE U.S. WITH REFERENCE TO CANADA

A. LITERATURE REVIEW: THE CONTEXT

Rural Educators in Pennsylvania

By drawing on the statistics that were compiled from the 1990 census by the State Data Center, one can speculate that approximately 62% of the counties in Pennsylvania have adult students, educators, and administrators residing in rural areas. The problems for these rural students, educators, and administrators are manifold including restricted access to educational opportunities, information, resources, and specialized subject matter; a lack of interaction with peers in other disciplines and geographic areas; and, of course, a lack of quality staff development training (or professional development) for rural professionals due to their geographic isolation (Batey & Cowell, 1986). Steen (1991) adds that "rural teachers [and administrators] . . . often . . . live in areas so sparse in population or financially strapped that access to top-notch professional development is difficult. Intermediate service agencies, universities, or colleges may mean several hours of driving" (p. 5). In effect, "the time, effort, and expense of travel limit opportunities for professional interaction [and adequate staff development training]" (US Congress, 1989, p. 30).

Rural Distance Education in the U.S.

The lack of professional development is evident in the results from a 1989 survey which was conducted by South Dakota's State Board of Education. The State Board of South Dakota, a very rural state, asked rural educators to describe their professional and educational qualifications as they pertained to their present teaching positions. The results showed discouragingly that "the majority of . . . [the] teachers have only an undergraduate degree and of those who have a masters degree, few have . . . training" that is specific to their teaching duties (Searl, p. 3). This is explained by the geographic isolation of these educators which results in "barriers such as demands of work and family or long commutes to class that inhibit . . . teachers' and administrators' ability to stay abreast in their area . " (Torres, et. al., 1991, p. 69).

Thus, Searl () insists that special efforts to provide accessible professional development and education must be made for the educators and administrators of rural areas who: have often grown up, are employed, and are raising or have raised families in these rural areas, and have a strong desire to remain in the area. Educating these individuals as close to their homes and communities as possible fills professional needs . . . while improving educational standards of personnel in rural areas is important (Searl, p. 4)

Providing access to professional development and continuing education, Neufeld and Birch (1985) add, "is one of the keys to obtaining whatever rewards a society has to offer" (p. 2). Conversely, by restricting access, the individuals in rural areas are not given the same opportunities as urban individuals to "obtain the rewards of society."

Oftentimes even the best intentions of educational administrators to provide equity in access to professional development and continuing education come in direct conflict with funding realities; the costs for educating over long distances--travel expenses, personnel, materials cost, etc.--are often too prohibitive to put into effect. Thus, educators and administrators in urban areas continue to have access to more and better quality professional development and continuing education opportunities simply because of geographical orientation, while educators and administrators in rural areas are left with little or poorly-designed staff development training sessions and continuing professional education.

It is for these reasons--geographic isolation, personal barriers to professional development participation, and prohibitive costs--that states with substantial rural populations are turning to distance education. *Distance education* or *distance learning:* is the use of telecommunications equipment such as the telephone, television, fiber optics, cable broadcast, and satellites to send

instructional programming to learners. The distance could be across the hall or across the continent, and the learners are students of all age levels, as well as teachers and administrators receiving professional development (Bruder, 1991, p. 20)

Distance Learning as a Viable Alternative:

Distance learning or distance education has long been considered a viable alternative to the traditional methods of classroom instruction in rural school districts, but has only recently been considered an alternative for the staff development training of adult professionals in rural areas. Educators and administrators of rural areas are showing increased awareness of the unique benefits that learning by distance methods offers them and are, in turn, showing an increased interest in this approach (Baker, 1987). With a distance education program in place, the rural educator and administrator are not only able to increase the amount of professional development and continuing education opportunities available to them, but they are also able tap into better quality and more extensive programs. In fact, Baker (1987) contends that "with a distance education system in place, school faculty and staff may have access to distance coursework provided by post-secondary institutions or other agencies" (p. 12). Moreover, he maintains that educational variety is also available to rural teachers and administrators by using distance learning since "opportunities for staff development can range from single

topic discussions or presentations to whole courses or degree programs" (p. 12).

Thus, educators and researchers are beginning to extol the virtues of distance learning for the professional development of rural educators and administrators. "Distance education works (p. 11)," contend Batey and Cowell (1986) where there has not been much conclusive evaluation of distance education at the . . . [adult staff development] level, results of evaluation conducted at the post-secondary level and within industry, show that students can learn at least as well by distance methods as they can by conventional methods (p. 11).

The members of the US Congress's Office of Technology concur with Batey and Cowell's (1986) assessment of the effectiveness of distance education stating that, although the evaluative literature is lacking at the professional development level, the literature of business and industry, the military, higher education, and adult learning is consistently positive. The Office of Technology's report concluded that "there is no significant difference in effectiveness between distance learning and traditional instruction methods, and student attitudes are generally positive about the experience" (p. 44).

Just as in any discipline, distance education is carried out by a variety of methods and media, including video-conferencing,

audio-conferencing, computer-conferencing, and a host of combinations in either real-time conferences or classes (synchronous) or at the student's convenience (asynchronous). A variety of instructional methods and media will be discussed below with examples of programs which have used each of these methods and media.

Audio-Conferencing:

Audio-conferencing in its most basic form is the linking up of groups of three or more people in at least two locations by means of a phone line. Mabry (1987) extends this definition stating that "the concept begins with a simple telephone, and from there it can develop into as sophisticated and expensive a system as the budget will allow" (p. 14).

Researchers and developers of a distance education program in Vancouver, Canada, contend that since audio-conferencing equipment is inexpensive both to buy and to use as well as fairly easy to operate, audio-conferencing "allows a group to be reconvened at modest expense and over long distance and is, therefore, playing an important role in the movement to enhance the role of the profession in the induction of new members (p. 7).

Mabry (1987) contends that there are several states that have well-established audio-conferencing capabilities including

Alaska, Illinois, Iowa, Texas, Alaska, as well as some of the major universities in Pennsylvania (including The Pennsylvania State University). The Pennsylvania universities, he continues, often link rural educators to university faculty for staff development training.

Although audio-conferencing has its drawbacks, such as the lack of visual interaction between the student and the presenter as well as the reliance on the unpredictable phone lines for clear sound, Mabry (1987) asserts that audio-conferencing does have some important advantages to rural educators interested in beginning a distance education program for staff development training. For example, Mabry (1987) contends that since equipment costs are low and the costs of using the equipment is also low (usually the cost of the phone call), the cost of the training may be recouped by charging a user fee.

In addition to the benefits of low costs, audio-conferencing is easily adaptable. The equipment may be set for either a large group or a small group as well as for a few sites or many separate sites, and the student is able to interrupt the staff development trainer at any time by speaking into the phone.

Mabry (1987) suggests that audio-conferencing may best "achieve its objectives through different structuring of courses, including visual enhancement incorporated into handouts,

audiographics, videotapes, and even photographs of the lecturer to help acquaint the students with more than a distant voice" (p. 17).

C. puter-Conferencing:

Computer-conferencing is the ability to communicate with others who are hooked up to their own computers through the use of a computer connected to a phone line by a modem. Due to the "saving" nature of computers, computer-conferencing "maintains a complete record of all that is said and can be reviewed at any time. In addition, conferencing is asynchronous, so time and distance deprive no student of access to learning" (Torres et. al., 1991, p. 69).

Thus, computer-conferencing, as proposed by Torres et. al. (1991), allows the rural educator or administrator to "participate in an instructional activity based upon . . . [his/hers] unique work schedule" (p. 69). This is because computer-conferencing may be done in real-time (synchronous) while all students are present at their computer terminals or at the students' convenience (asynchronous) by allowing them to read what has already been writ.en to an electronic bulletin board and to respond appropriately to the same electronic bulletin board.

The benefits of using computer-conferencing for staff development training are that it allows scheduling of classes or lectures to

be determined by the educator and administrator of rural areas. No longer are schedules dictated by the presenter. Moreover, as Torres et. al. (1991) suggest, computers allow for the storage of information to be reviewed again and again, enabling the student to fully understand the material by reviewing past material. The use of computer-conferencing also allows the educator or administrator the time to reflect upon the material that has been presented before constructing his/her answer or response (Mabry, 1987).

Mabry (1987) offers the example or a staff development class for vocational education teachers in Georgia as an instance of successful computer-conferencing. He says that because the computer-conference in this case is "replacing approximately 26 hours of classroom meetings" (p. 19), more than twice the number of students who would have been able to attend face-to-face meetings are currently attending the computer-conference. This is due to the enrollment of rural vocational education teachers who would not have been able to meet the demands of travel and time in traditional face-to-face classes.

In New Jersey, rural educators and administrators are also participating in a computer-conference which is meant to help teachers to "increase professional contact with their peers, exchange curriculum materials and classroom ideas, and access databases and information sources . . . " (US Congress, 1989, p.

33). The teachers and administrators are invited to attend face-to-face workshops that are held every 6 weeks and are then able to keep in contact with other participants through an electronic bulletin board or through electronic mail (which is differentiated from the electronic bulletin board because it posts personal rather than public messages) (US Congress, 1989).

Thus, the successes of the staff development training programs in Georgia and New Jersey are due, in great part, to the addition of distance education opportunities offered to rural educators and administrators. Mabry (1987) adds that "by the year 1990 there will be over 30 million personal computers installed worldwide . . . . Personal computer . . . [conferencing] will evolve wherever users with a subject in common are separated by time and space" (p. 17).

Of course, there are drawbacks to the computer-conference. For instance, there is the fear of the technology that may hold back potential staff development participants (Mabry, 1987). Yeun (1984) reported that attitudes towards using microcomputers were positively correlated with educational level, microcomputer experience, . . . training, and availability. Teachers' attitudes towards the use of microcomputers showed negative relationships with age and service (in Torres et. al., 1991, p. 70). Mabry (1987), however, explains that the use of "user-friendly software system[s] and initial orientation to the

equipment seem[s] to . . . overcome computer phobias" (p. 20).

On the other hand, Mabry (1987) contends that the absence of visual and voice interaction as well as the necessity for written expression may also constitute drawbacks for the computer - conference. In fact, research conducted by Abat (1989) found that although the students felt generally that computer conferencing enhanced communication during the course, a number felt strongly that computer conferencing should not replace classroom sessions. They expressed a need to have face to face communication with the instructor and fellow students (In Torres et. al., 1991 p. 70)

Video-Conferencing:

Mabry (1987) explains video-conferencing as distance education that: combines audio and video media to link people in different places by voice and with television pictures. Television images are sent from a production site (up link) to one or more remote sites (down link). Transmission is via cable, satellite, or microwave, or various combinations of these. The video teleconference can be live or recorded, with transmission one-way or two-way (p. 20)

The US Congress' Office of Technology (1989) explains that *one-way video-conferences* generally have two-way audio whereby the presenter and the students are able to verbally interact;

however, although the students are able to see the presenter, the presenter is unable to see the students. *Two-way video-conferences,* on the other hand, are the closest approximation to the traditional classroom that technology can provide. At these conferences, students and the presenter are not only able to interact verbally, but the students and the presenter are each able to see each another.

By far, the greatest number of rural programs that use distance education methods use video-conferencing to provide staff development training in rural areas. Baker (1987) explains that "the largest system, the TI-IN Network, operates out of Texas . . . . The network beams extensive inservice training for teachers, enrichment programs for students, . . . and selected college credit courses" (p. 2). TI-IN "serves 1,100 schools in 40 states with more than 5,000 hours of instruction a year . . . " (Bruder, 1991, p. 22). As Mabry (1987) maintains, there are a number of State Departments of Education that have funded staff development in their states using TI-IN. They include, for example, Washington, Arizona, Missouri, West Virginia, North Dakota, California, and Vermont.

The next largest video-conferencing system originates at The Oklahoma State University (Baker, 1987). In 1990, the University "offered 20 diversified staff development programs . . . . [and] Staff Development Programming was received in over 33 states,

reaching 6161 participants at 581 schools" (The Midland, 1991, p. 11).

According to Baker (1987), the third largest provider of satellite transmission is "operated by the Utah State Department of Education with support from the IBM Corporation and Bonneville International Corporation" (p. 3). During the daytime hours, Utah's State Department of Education provides enrichment courses, specialized courses, and other instruction to K-12 school students. In the evening, however, the Department of Education offers "staff development, college credit instruction, adult education, continuing education, community education, etc." (Baker, 1987, p. 5).

Video-conferencing and the *StarSchools Grants*

In 1988, the federal government began a grant program named the *Star Schools Grant Program*. These grants were designed to help schools develop, implement, and promote distance education in their respective states in order to make access to education equitable for all geographic areas. Although the program was originally developed to help K-12 students, the program has been expanded to include staff development training for the teachers and educators of rural areas.

One of the recipients of the *Star Schools* grant was the educators of the sparsely-populated Oklahoma Panhandle. The US Congress's

Office of Technology (1989) credits the Star School Grant as well as grants from the Oklahoma Office of Rural Education and two private foundation grants, as the impetus for the development of the *Panhandle Shar-Ed Video Network Cooperative,* a distance education program that is maintained with technology and cost partnerships among four school districts in the panhandle.

Along with Oklahoma, Kansas, Kentucky, Missouri, and Mississippi were also granted *Star School Grants* to begin distance education programs. According to *The Midlands Consortium Star Schools Project* (1991), the Kansas program was based upon a partnership that was formed between The Midlands Consortium and Kansas State University to develop an extensive staff development program using distance education. In fact, the 1990-91 school year saw the development and distribution of an ambitious Staff Development series with six programs (seven hours) of live interactive programming produced and uplinked prior to December 31, 1990. By May of 1991, the full series of 13 programs (19 hours) drew participation from more than 3,000 teachers and administrators in 80 school districts across the country (p. 10)

The Kansas staff development model, according to Dyck and Thurston (1987), uses the satellite broadcast method of TELENET as well as independent study, scheduled face-to-face meetings with local tutors and university faculty, and field experience. Dyck and Thurston ( ) contend that "the model holds promise for

the future of . . . education because teachers can receive training without quitting their jobs and leaving home for extended periods of time . . . " (pp. 9-10).

In 1987, the Kentucky legislature approved funding to install satellite dishes on every school in the state in order to link the rural school students and personnel to educational opportunities (Bruder, 1991). "Today," contends Bruder (1991), "the satellites are in place at the more than 1,300 schools and even public libraries and community colleges are equipped with them" (p. 23). Thus, the state was able to offer approximately 85 hours of staff development training in 1990 to urban and rural educators and administrators alike (Bruder, 1991).

In Mississippi, the *Midlands Consortium* again formed a partnership with another university, Mississippi State University, to develop a distance education program. In the area of professional development, the partners "produced two live, interactive staff development programs" (The Midlands, 1991, p. 10). Teachers, in Mississippi, will also be able "to take courses or institutes in teaching . . . science, Earth sciences, theory of equations, and physics that will be offered throughout the nationwide TI-IN Network" (US Congress, 1991, p. 29).

Finally, utilizing the *Star Schools Grant,* "the Missouri School Boards Association and their Educational Satellite Network

developed programs and teleconferences for school board members, administrators, and educators on a variety of topics" (The Midlands, 1991, p. 10).

Distance learning in Missouri has been so successful that in addition to the grant funding, Missouri has also instituted an innovative funding alternative to insure the continuation of its distance learning programs. The state has placed a tax a videotape rentals in order to help pay for satellite transmission. The tax is expected to top $5,000,000 in its first year (US Congress, 1989).

Video-conferencing and Volunteer Programs:

The introduction of video-conferencing has also been advantageous to rural programs that rely heavily on volunteers. In Florida, the *Literacy Volunteers of America* developed a distance education training model with the Florida Department of Education and the Florida Administrators of Adult Education, Area I to improve the recruitment and training of volunteer literacy instructors. The impetus for this program came as recruitment fell below the need for volunteers. In other words, "the existing number of illiterate adults necessitate[d] new and creative methods of recruiting and training volunteer literacy tutors" (Final Report, 1988, p. 13).

A Florida TV station broadcasted the *Literacy Volunteers of*

America training sessions to the entire Florida panhandle for "six Fridays from 5:00 P.M. until 5:30 P.M . . . . The programs were re-run on Saturday mornings, 8:00 until 8:30 A.M" (Final Report, p. 4). Prior to the broadcast of the training sessions, volunteer tutors attended a face-to-face orientation session where the materials for the training sessions were given to the participants. After the broadcasted sessions, the tutors were asked to attend a wrap-up session at locally-designated centers.

The *Final Report* on the outcome of this initiative suggested that "of 167 tutors recruited to this broadcast training, 104 tutors had completed the training" (p. 11). Thus, the authors suggested that using video-conferencing may actually "attract volunteer tutors when other methods do not. The . . . method may be viewed as an effective method of training literacy volunteers . . . " (p. 12).

From Audio-Conferencing to Teleconferencing

In order to distinguish audio-conferencing from tele-conferencing, Mabry (1987) explains that audio conferencing is teleconferencing in its oldest, most widely used and basic form (p. 14). In effect, while teleconferencing and audio-conferencing enable groups of three or more in different locations to participate in an exchange of ideas over phone lines; teleconferencing goes much further than audio-conferencing. Teleconferencing generally employs the use

of audio, video, and computer conferencing (Neufeld and Birch, 1985). In other words, groups of people are not only able to communicate over phone lines with one another (as in audio-conferencing) but they are also able to communicate with each other via computer (electronic mail, electronic bulletin boards) as well as through satellite (television images originated in another site).

In Vancouver, Canada, the University of British Columbia instituted a teleconferencing program which links the faculty of the University to the rural educators and administrators of British Columbia. Neufeld and Birch (1985) explain the need for such a program by describing the geographic isolation of British Columbia educators and administrators. They explain that the "opportunities vary greatly when one contrasts the concentration of more than 10,000 teachers in the Greater Vancouver region with the dispersion of 3,000 teachers in the Central and Northern Interior over an area greater than the size of France" (p. 5).

The University of British Columbia asserts that using teleconferencing (including phone links, computer, and satellite broadcast) has both improved the educational opportunities of rural educators and administrators as wel. as cut costs for the University. In fact, UBC says that "the outcome of a 1 1/2 hour session . . . [with] onsite staff to conduct local one-day workshops that accompanied the teleconference . . . [had] a total

cost of $450.00. To have conducted such a training session in Vancouver would have cost approximately $8,500.00" (Neufeld and Birch, 1985, p. 6).

In the United States, several programs are also enjoying the benefits of the technologically-expanded teleconferencing systems. In South Dakota, for example, the teleconferencing programs were so successful that a survey conducted between 1990-91 revealed that "ninety-one percent of the administrators plan to expand distance learning in their schools over the next five years" (Students. School, 1991, p. 7).

Another particularly successful program using teleconferencing originated as a reading in-service program in rural Wisconsin. In Wisconsin the Department of Public Instruction and the Communications Board provided the technology that linked the "staff development to project schools through networked computers, television, radio, video-conferencing, and telephone conference calls. [The North Central Regional Educational Laboratory] . . . brought into the high-tech mix its expertise in reading instruction, staff development, rural education, leadership, and school change" (Steen, 1 99 1, p. 5).

In the Wisconsin project, dubbed the RWRP (Rural Wisconsin Reading Project), clusters of schools share the costs and upkeep of the technology as well as share the cost of a full-time

distance education technician. In addition, there are inner-school as well as intra-school clusters of personnel which serve as "school leadership teams, made up of principals, reading specialists, library-media specialists, and teachers . . . [who] guide staff development . . . " (Steen, 1991, p. 6).

Steen (1991) states that program evaluation has shown that the RWRP is an overwhelming success. In fact, the program was recently submitted "to the U.S. Department of Education's Program Effectiveness Panel, which has confirmed that the project did, indeed, improve reading instruction through telecommunications-supported staff development . . . " (p. 6).

Wilisman (1988) adds that the success of the RWRP has "provide[d] . . . students and staff members, unique opportunities to communicate and network with their counterparts or experts in distant places; and to provide inservice and graduate credit courses for teachers" (p. 116).

Cautions for Planners of Distance Learning

Although the promise of distance learning for rural educators and administrators is appealing, Batey and Cowell (1986) suggest that the use of distance learning is not a panacea. In fact, they offer several words of caution to the prospective distance learning professional. The researchers suggest that, all too often, administrators in rural areas are lured by the

seductiveness of new technology. However, Batey and Cowell (1986), add, a strong "distance education [program] begins with a need; it does not begin with . . . technology" (p. 3).

Grinvalsky and Jacobson (1989) also offer several warnings to administrators who are contemplating implementing distance learning programs, specifically teleconferences. They contend that all teleconferences must be well-planned with at least two months of preparation, the content must be on-target, the visual material that is presented during the conference must be simple and easy-to-read, and the costs to the participants must be reasonable. Grinvalsky and Jacobson ( ) assert that the production quality . . . is extremely important. This is, after all, a visual medium. At best, the proper use of the technology will enhance the presentation of materials. At worst, haphazard or sloppy use of the technology will distract from or obscure the message (p. 126)

Implications

A survey by Nelson and Sommer (1989) asked educators and administrators in Idaho if they were interested in more staff development training. The responses suggested that "only a handful of respondents indicated no interest in any of the staff development choices . . . and the vast majority (90% or higher) were somewhat or very interested" (p. 6). Moreover, according to Nelson and Sommer (1989), rural educators and administrators seem

to have been starved for more and better professional development as seen through their responses to the survey. In fact, the results showed that "rural districts report that 86% of them are very interested in inservice or recertification training versus only 58% of their nonrural counterparts" (p. 6). Thus, it is obvious from the standpoints of the rural educator and administrator as well as educational researchers that access to professional development must be enhanced for the rural educator.

In the wake of extensive positive evaluation from industry, the military, higher education, and adult education as well as the beginnings of positive evaluation from the K-12 and professional development levels on the effectiveness of distance education, rural educators and administrators are now beginning to see that "distance learning is changing the educational boundaries--boundaries traditionally defined by location and by institution" (US Congress, 1989, p. 27).

In fact, the promise of connecting to more and better staff development training has caused a virtual explosion of distance learning programs funded, in part, by the State Departments of Education as well as private foundations and corporations, and federal grants. The US Congress's Office of Technology announced that "fewer than 10 States were investing in distance learning in 1987; 1 year later, two-thirds of the States reported involvement. Today, virtually all States have an interest or

effort in distance education" (p. 27).

Commenting on the usefulness of professional development to the state of education, Knapczyk, et. al. (1991) contend that by implementing well-planned distance education programs in rural communities, on-the job performance of rural teachers and administrators would be enhanced; cooperation, collaboration, and stronger ties to other educators would be instilled; and the professional in the rural areas would be empowered due to the freedom to choose not only what types of professional development in which to participate but also when and where to participate.

In a state such as Pennsylvania where 31% of its total population resides in rural areas, it is necessary to consider the benefits of alternative models for staff development training in rural areas. Distance learning is one such alternative. As the Adult Education Unit of Sacramento, California suggests: "funding mechanisms should be reviewed and adjusted to encourage use of educational technologies, responsiveness to the diversity of educational clients, and development of alternative instructional methods" (p. 1).

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